What is Claimed:

1   1.   A device for monitoring wear of dicing saw blade, the device
2 comprising:

3   a light source to emit light onto an end surface of the saw blade;

4   a sensor for receiving a reflection of a portion of the light from the
5 end surface of the saw blade; and

6   a processor coupled to the sensor for determining wear of the saw
7 blade based on an output from the sensor.

1   2.   The device according to claim 1, wherein the sensor
2 determines a distance to the edge of the saw blade based on triangulation.

1   3.   The device according to claim 1, further comprising first
2 focusing means for focusing the reflected light onto the plurality of sensors.

1   4.   The device according to claim 1, wherein the sensor is a
2 plurality of sensors.

1   5.   The device according to claim 4, wherein each of the
2 plurality of sensors determines a respective distance to the edge of the saw blade
3 based on triangulation.

1   6.   The device according to claim 4, further comprising a
2 respective plurality of first focusing means for focusing the reflected light onto
3 the plurality of sensors.

1   7.   The device according to claim 1, wherein the monitoring
2 device is mounted on a cooling block of the saw blade.

1   8.   The device according to claim 1, wherein the light impacts
2 the end of the saw blade substantially orthogonal to an axis of the saw blade.

1   9.   The device according to claim 1, wherein the light impacts
2 the surface of the saw blade substantially normal to a cutting edge of the saw
3 blade.

1   10.   The device according to claim 1, wherein the sensor is a
2   position sensitive detector.

3   11.   The device according to claim 1, wherein the sensor is a
4   CCD detector.

1   12.   The device according to claim 1, wherein the sensor
2   produces an output based on a position of the reflected light on a surface of the
3   sensor.

1   13.   The device according to claim 1, wherein the emitter is a
2   laser diode.

1   14.   The device according to claim 1, wherein the emitter
2   provides a light output having a wavelength of between about 600 to 800 nm.

1   15.   The device according to claim 1, wherein the processor
2   determines blade wear based on a measured distance between the light source and
3   a cutting edge of the saw blade.

1   16.   The device according to claim 15, wherein the processor
2   stores successive wear data from the saw blade in a database.

1   17.   The device according to claim 1, wherein the processor
2   provides a warning output based on a predicted wear of the saw blade, the
3   predicted wear determined from the successive wear data.

1   18.   The device according to claim 1, wherein the predicted wear
2   of the blade is based on a comparison of the successive wear information stored
3   in the database.

1   19.   The device according to claim 1, further comprising a
2   monitor for displaying at least one of i) a wear rate of the saw blade, and ii) an
3   estimated time for replacement of the saw blade.

1   20.   The device according to claim 1, wherein saw blade wear is
2   determined in real time.

1　　　　　21.　A method for monitoring wear of a dicing saw blade, the
2　method comprising the steps of:

3　　　　　　　emitting light onto an cutting edge of the saw blade;

4　　　　　　　receiving a reflection of a portion of the light from the edge of the
5　saw blade; and

6　　　　　　　determining wear of the saw blade based on the reflected light.

1　　　　　22.　The method according to claim 21, further comprising the step
2　of displaying at least one of i) a wear rate of the saw blade, and ii) an estimated
3　time for replacement of the saw blade.

1　　　　　23.　A method for monitoring wear of a dicing saw blade, the
2　method comprising the steps of:

3　　　　　　　emitting light onto a cutting edge of the saw blade;

4　　　　　　　receiving a reflection of a portion of the light from the edge of the
5　saw blade;

6　　　　　　　triangulating a distance to the saw blade base on the reflected light
7　and

8　　　　　　　determining wear of the saw blade based on the triangulated
9　distance.

1　　　　　24.　A device for monitoring wear of dicing saw blade, the device
2　comprising:

3　　　　　　　means to emit light onto a surface of the saw blade;

4　　　　　　　receiving means for receiving a reflection of a portion of the light
5　from the surface of the saw blade; and

6　　　　　　　processing means coupled to the receiving means for determining
7　wear of the saw blade based on an output from the receiving means.

1   25.   The device according to claim 24, further comprising:

2   display means for displaying at least one of at least one of i) a wear
3   rate of the saw blade, ii) a diameter of the saw blade, and ii) an estimated time
4   for replacement of the saw blade.

1   26.   The device according to claim 25, further comprising memory
2   means for storing the information displayed by the display means.

1   27.   The device according to claim 25, further comprising means for
2   predicting wear of the saw blade.

1   28.   A device for use with a dicing saw to monitor wear of a
2   dicing saw blade, the device comprising:

3   a light source to emit light onto the saw blade; and

4   a sensor for receiving at least a portion of the light from the light
5   source via the saw blade, the received portion of the light based on a wear of the
6   saw blade,

7   wherein the device is mounted on a cooling block of the dicing saw.